Project Code and Title

B.02.02.04 Upgrade Occupant Protection Systems

Project Objective

The project has been significantly refocused to model and experimentally evaluate the adverse effects of air bags on crash victims who are out of position at time of air bag inflation initiation. Decision relative to renewal of the Hittite anticipatory radar contract is delayed until funding obligation needs and priorities are resolved.

Background

Air bag aggressivity has produced fatal injuries to adult drivers and children in the right front seating position. The driver fatalities have most frequently been women, short statured, most frequently unbelted and commonally involved in low speed crashes. The passenger airbag deployment related child fatalaties have occurred in cases of infants in rearward facing infant seats and unbelted or improperly belted older children who were located in the front right outboard seat equipped with a passenger air bag.

Problem Definition

Real world crash injury experience studied under program B.01.12, Improved Frontal Crash Protection, by Automotive Systems Laboratory under this program, and Special Crash Investigations conducted by the National Center for Statistics and Analysis have identified several situations under which current occupant protection systems are not achieving desired results. Some of these deficiencies are thought to be related to the aggressive nature of air bag deployments which may be addressed through design changes of the air bag systems.

Research Approach

Automotive Systems Laboratory, working under a cooperative research program, is currently evaluating some potential changes in air bag systems which are aimed at improved occupant protection. Anticipatory crash sensing may provide means for earlier air bag deployment initiation in crashes and thereby allow more time for a less aggressive bag inflation than is now reasonable with current crash sensing technology. Cooperative research programs with Romeo Engineering International and Hittite Microwave Corporation evaluated means for achieving anticipatory crash sensing to allow earlier initiation and less aggressive air bag deployment. Under a second cooperative agreement Romeo Engineering International is now evaluating the potentials of current inflator technology and improvement in air belt configuration to provide improved occupant protection.

An Advanced Notice of Proposed Rulemaking was issued August 1, 1996 describing several near term interim methods to reduce the threat to children. Longer term "smart air bag" approaches were also discussed and comments were requested for submission by September 20, 1996. New research initiatives may result from evaluations of comments received. It is expected that some near term improvements will be implemented by January 1997.

Potential Impact/Application

Potential upgrade of FMVSS 208.

Key Milestones

- Decision on proceeding with further funding of cooperative research agreement with Hittite Microwave Corp. For anticipatory radar, August 1996.
- Progress briefing by Automotive Systems Laboratory on developing improved driver air bag systems, Sept. 1996.
- Final report from Romeo Engineering International on implementation of current technology for inflatable belt improvement, Jan. 1997.

RESOURCE REQUIREMENTS	FY96	FY97	FY98	FY	FY
Contract Money ($K)	300	800			

Project Manager(s)

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Project Tasks

Task	Title and Description
Task 1	Preliminary Cost/benefit Analysis
Task 2	Air Belt
Task 3	Anticipatory Crash Sensor
Task 4	Advanced Air Bag Systems
Task 5	Experimental Investigation of Late Deployment

Task	Start Date	Projected Completion Date	Status/Responsibility
1	1993	1998	U. VA., complete; Air Belt, Jan. 1997; Anticipatory Crash Sensor, (prelim. Complete); Advanced Air Bag, Jan. 1998
2	Aug. ‘94	Dec. 1996	Program extended for improved design
3	june ‘93	Jan. ‘95	Considering follow-on
4	Mar. ‘93	Jan. ‘98	Testing of ASL dcab driver syst. Progressing in Japan
5	Sept. ‘96	?	Low speed crash tests as part of accident reconstruction program - VRTC